

Asthma: History and Physical findings

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Pediatric Pulmonology

Key Symptom Indicators for Considering a Diagnosis of Asthma

- Wheezing—**high-pitched** whistling sounds when **breathing out**.
- A lack of wheezing and a normal chest examination do not exclude asthma.
- History of any of the following:
 - Cough (worse particularly at night)
 - Recurrent wheeze
 - Recurrent difficulty in breathing
 - Recurrent chest tightness
 - Lingering cough after a cold

Key Symptom Indicators for Considering a Diagnosis of Asthma

- ▶ Symptoms occur or worsen in the presence of the following:
 - ▶ Exercise
 - ▶ Viral infection
 - ▶ Inhalant allergens (eg, animals with fur or hair, house-dust mites, mold, pollen)
 - ▶ Irritants (tobacco or wood smoke, airborne chemicals)
 - ▶ Changes in weather
 - ▶ Strong emotional expression (laughing or crying hard)
 - ▶ Stress
 - ▶ Menstrual cycles
- ▶ Symptoms occur or worsen at night, awakening the patient.

Medical History

- Symptoms
- Pattern of symptoms
- Precipitating and/or aggravating factors
- Development of infections and treatment
- Family history
- Social history
- History of exacerbations
- Effect of asthma on patient and family
- Assessment of patient's and family's perception of disease

Pattern of Symptoms

- Perennial, seasonal or both
- Continual, episodic or both
- Onset, duration, frequency
- Diurnal variations, especially nocturnal

Precipitating, Aggravating Factors

- **Viral respiratory factors**
- Change in weather
- Exercise
- Environmental allergens
- Smoking, smoke exposure
- Characteristic of home (carpet, basement, water leaks etc.)
- Environmental change (recent move, new pets etc.)
- Drugs (B-blockers, ASA)
- Pregnancy

Development of Disease & Treatment

- ▶ Age of onset and diagnosis
- ▶ History of early life injury to airways (CLD, pneumonia, parental smoking)
- ▶ Present management and response
- ▶ Adherence to use of medications
- ▶ Frequency of using SABA
- ▶ Need for oral corticosteroids and frequency of use

Family history


- ▶ Asthma
- ▶ Allergy
- ▶ Sinusitis
- ▶ Eczema
- ▶ Nasal polyps

Social History

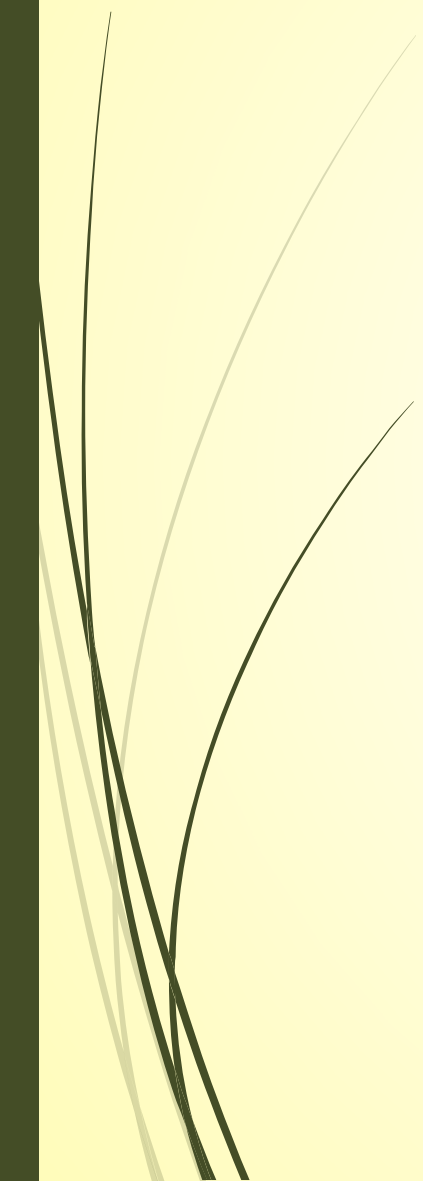
- ▶ Daycare, workplace, school
- ▶ Social factors that interfere with adherence
- ▶ Social support

History of Exacerbations

- ▶ Usual prodromal of signs and symptoms
- ▶ Rapidity of onset
- ▶ Duration
- ▶ Frequency
- ▶ Severity (urgent care, ED, hospitalization)
- ▶ Life-threatening exacerbations
- ▶ Number and severity of exacerbations in the last year
- ▶ Usual pattern of management



Effect of Asthma on Patient and Family

- ▶ Number of days missed from school/work
 - ▶ Limitation of activity
 - ▶ History of nocturnal activity
 - ▶ Effect on growth, development, behavior, school/work performance
 - ▶ Effect on family routines
- 



Assessment of Patient's and Family's Perception of Disease

- ▶ Knowledge of asthma and belief in the chronicity of asthma and efficacy of treatment
- ▶ Perception and beliefs regarding use of long-term effects of medications
- ▶ Ability to cope with disease
- ▶ Level of support
- ▶ Economic resources
- ▶ Sociocultural beliefs



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Ages 12
and over

Ages 4-11

En Español

1. In the past **4 weeks**, how much of the time did your **asthma** keep you from getting as much done at work, school or at home?

All of the
time

Most of
the time

Some of
the time

A little of
the time

None of
the time

2. During the past **4 weeks**, how often have you had shortness of breath?

More than
once a
day

Once a
day

3 to 6
times a
week

Once or
twice a
week

Not at all

3. During the past **4 weeks**, how often did your **asthma** symptoms (wheezing, coughing, shortness of breath, chest tightness or pain) wake you up at night or earlier than usual in the morning?

4 or more
nights a
week

2 or 3
nights a
week

Once a
week

Once or
twice

Not at all

4. During the past **4 weeks**, how often have you used your rescue inhaler or nebulizer medication (such as albuterol)?

3 or more
times per
day

1 or 2
times per
day

2 or 3
times per
week

Once a
week or
less

Not at all

5. How would you rate your **asthma** control during the **past 4 weeks**?

Not
controlled

Poorly
controlled

Somewhat
controlled

Well
controlled

Completely
controlled

Physical Examination

- The upper respiratory tract
 - increased nasal secretions
 - mucosal swelling
 - nasal polyps
- The chest
 - wheezing during normal breathing
 - prolonged phase of forced exhalation
 - hyperexpansion of the thorax
 - use of accessory muscles
- The skin
 - atopic dermatitis

Pulmonary Function Testing

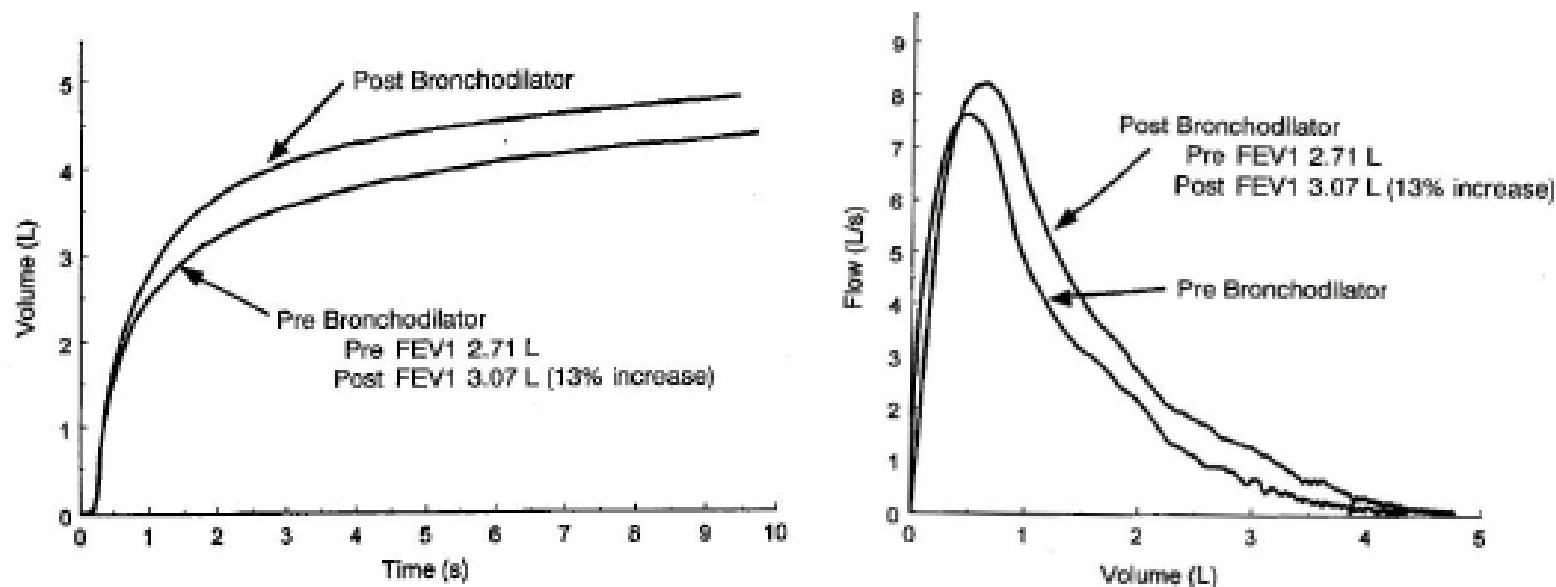
- ▶ Additional pulmonary function studies may help if there are questions about COPD (diffusing capacity), a restrictive defect (measures of lung volumes), or VCD (evaluation of inspiratory flow-volume loops)

Pulmonary Function Testing

- ▶ Bronchoprovocation with methacholine, histamine, cold air, or exercise challenge may be useful when **asthma is suspected** and spirometry is normal or near normal.

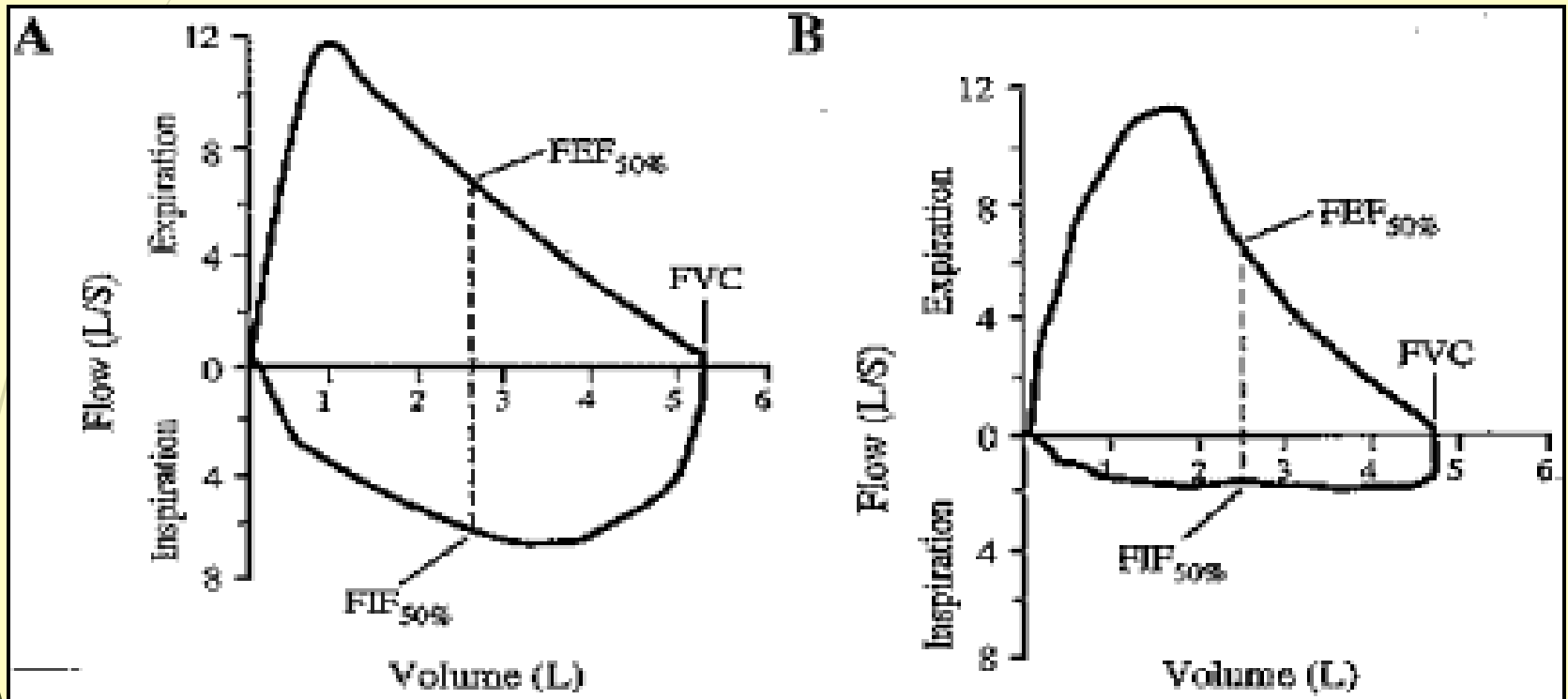
Pulmonary Function Testing

FIGURE 3-3a. SAMPLE SPIROMETRY VOLUME TIME AND FLOW VOLUME CURVES



Key: FEV₁, forced expiratory volume in 1 second

Vocal Cord Dysfunction



Common Diagnostic Challenges

- ▶ Asthma with coughing as the main symptom
 - ▶ Cough can be the principal—or only—manifestation of asthma, especially in young children.
 - ▶ Monitoring of PEF or bronchoprovocation may be helpful.
 - ▶ **Diagnosis is confirmed by a positive response to asthma medications.**
- ▶ Vocal cord dysfunction can mimic asthma
 - ▶ It is a distinct disorder.
 - ▶ VCD may coexist with asthma.
 - ▶ Asthma medications typically do not relieve VCD symptoms.
- ▶ Gastroesophageal reflux disease (GERD), obstructive sleep apnea (OSA), and allergic bronchopulmonary aspergillosis may coexist with asthma and complicate diagnosis.
- ▶ Children ages 0 to 4 years. Diagnosis in infants and young children is challenging and is complicated by the difficulty in obtaining objective measurements of lung function in this age group. **Use clinical history.**

BOX 3-3. DIFFERENTIAL DIAGNOSTIC POSSIBILITIES FOR ASTHMA

Infants and Children

Upper airway diseases

- Allergic rhinitis and sinusitis

Obstructions involving large airways

- Foreign body in trachea or bronchus
- Vocal cord dysfunction
- Vascular rings or laryngeal webs
- Laryngotracheomalacia, tracheal stenosis, or bronchostenosis
- Enlarged lymph nodes or tumor

Obstructions involving small airways

- Viral bronchiolitis or obliterative bronchiolitis
- Cystic fibrosis
- Bronchopulmonary dysplasia
- Heart disease

Other causes

- Recurrent cough not due to asthma
- Aspiration from swallowing mechanism dysfunction or gastroesophageal reflux

Adults

- COPD (e.g., chronic bronchitis or emphysema)
- Congestive heart failure
- Pulmonary embolism
- Mechanical obstruction of the airways (benign and malignant tumors)
- Pulmonary infiltration with eosinophilia
- Cough secondary to drugs (e.g., angiotensin-converting enzyme (ACE) inhibitors)
- Vocal cord dysfunction

Monitoring Signs and Symptoms of Asthma

- ▶ Daytime asthma symptoms (including wheezing, cough, chest tightness, or shortness of breath)
- ▶ Nocturnal cough as a result of asthma symptoms
- ▶ Frequency of use of SABA for relief of symptoms
- ▶ Inability or difficulty performing normal activities (including exercise) because of asthma symptoms

Monitoring Signs and Symptoms of Asthma

Monitoring Signs and Symptoms

(Global assessment) “Has your asthma been better or worse since your last visit?”

“Has your asthma worsened during specific seasons or events?”

(Recent assessment) “In the past 2 weeks, how many days have you:

- Had problems with coughing, wheezing, shortness of breath, or chest tightness during the day?”
- Awakened at night from sleep because of coughing or other asthma symptoms?”
- Awakened in the morning with asthma symptoms that did not improve within 15 minutes of inhaling a short-acting beta₂-agonist?”
- Had symptoms while exercising or playing?”
- Been unable to perform a usual activity, including exercise, because of asthma?”

Monitoring pulmonary function

- ▶ Spirometry
- ▶ Peak flow monitoring
- ▶ Peak flow vs. symptom-based monitoring action plan

Monitoring Pulmonary Function

Monitoring Pulmonary Function

Lung Function

“What is the highest and lowest your peak flow has been since your last visit?”

“Has your peak flow dropped below ___ L/min (80 percent of personal best) since your last visit?”

“What did you do when this occurred?”

Peak Flow Monitoring Technique

“Please show me how you measure your peak flow.”

“When do you usually measure your peak flow?”

Monitoring Quality of Life

- Any work or school missed because of asthma
- Any reduction in usual activities (either home/work/school or recreation/exercise)
- Any disturbances in sleep due to asthma
- Any change in caregivers' activities due to a child's asthma (for caregivers of children who have asthma)

Monitoring Quality of Life

ASTHMA THERAPY ASSESSMENT QUESTIONNAIRE[®] (ATAQ)

1. In the past 4 weeks did you miss any work, school, or normal daily activities because of your asthma? (1 point for YES)
2. In the past 4 weeks, did you wake up at night because of your asthma? (1 point for YES)
3. Do you believe your asthma was well controlled in the past 4 weeks? (1 point for NO)
4. Do you use an inhaler for quick relief from asthma symptoms? If yes, what is the highest number of puffs in 1 day you took of this inhaler? (1 point for more than 12)

Total points = 0–4, with more points indicating more control problems

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Monitoring Quality of Life

BOX 3-4. INSTRUMENTS FOR ASSESSING ASTHMA-SPECIFIC AND GENERIC QUALITY OF LIFE

Asthma-Specific Quality of Life

- Mini Asthma Quality of Life Questionnaire (Juniper et al. 1999a)
- Asthma Quality of Life Questionnaire (Katz et al. 1999; Marks et al. 1993)
- ITG Asthma Short Form (Bayliss et al. 2000)
- Asthma Quality of Life for Children (Juniper et al. 1996)

Generic Quality of Life

- SF-36 (Bousquet et al. 1994)
- SF-12 (Ware et al. 1996)

Monitoring History of Asthma Exacerbations

- ▶ The most common cause of severe exacerbations is infection with a respiratory virus, especially rhinovirus, but exacerbations may be brought on by exposures to allergens or irritants, air pollutants, certain medications, and, possibly, emotional stress.
- ▶ Exacerbations also can be triggered by withdrawal of ICS or other long-term-control therapy.

Monitoring History of Asthma Exacerbations

- ▶ It is important to evaluate the frequency, rate of onset, severity, and causes of exacerbations
- ▶ A history of previous exacerbations, especially in the past year, is the strongest predictor of future severe exacerbations leading to ED visits and hospitalizations

Monitoring History of Asthma Exacerbations

- ▶ Severity of the exacerbation can be estimated by the increased need for oral corticosteroids
- ▶ Any hospitalizations should be documented, including the facility, duration of stay, and any use of critical care or intubation. To facilitate continuity of care, the clinician then can request summaries of all care received

Monitoring History of Asthma Exacerbations

Monitoring Exacerbation History

“Since your last visit, have you had any episodes/times when your asthma symptoms were a lot worse than usual?”

If yes, “What do you think caused the symptoms to get worse?”

If yes, “What did you do to control the symptoms?”

“Have there been any changes in your home or work environment (e.g., new smokers or pets)?”

Follow up

- See patients every 3 to 6 months for follow up or more frequently with exacerbations
- Adjust controllers if needed based on exacerbations.